

ABSTRACT

An imager having a photodiode with a shallow doping profile with respect to the top surface of a substrate is disclosed. An imager with a graded pinned surface layer, self-aligned to a gate stack is provided. A photodiode with a shallow doping profile with respect to the top surface of a substrate and a graded pinned surface layer, self-aligned to a gate stack is provided. These photodiodes exhibit reduced image lag, transfer gate leakage, and photodiode dark current generation.